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ABSTRACT

The purposes of this study were to examine strengths and weaknesses of research methods used in reports of follow-up studies in higher education and to develop a set of guidelines for conducting follow-up studies in higher education. A careful examination of the literature was conducted to identify follow-up studies in higher education and 47 states were located. These studies were critiqued in relation to sound research methods. Guidelines for conducting follow-up studies in higher education were also reported. References are included. (Author)

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RESEARCH METHODS FOR CONDUCTING FOLLOW-UP STUDIES IN HIGHER EDUCATION

by

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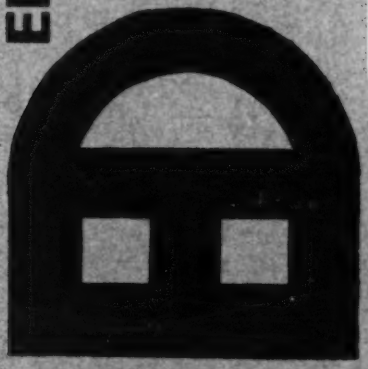

OCCASIONAL PAPER 6

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FOREWORD

The members of the faculty of the Curry Memorial School of Education recognize the need for new ideas in education, research and information of wide professional concern to ease our troubles. Increasingly, as educators and as members of the world community, we wish to interact in *our* time and with our fellows, to be gadflies and to engage other gadflies.

We encourage the use of specialized tools to dig out tentative responses, suggestions of means, parts of answers. As gadflying specialists, we know that problems must be attacked from many directions. We recognize the interdependence of the various scholarly pursuits and we also recognize that fresh insights and experimentation will be sparked by multi-disciplinary approaches. The interdependent nature of our studies demands effective communication, the need to avoid unintelligible technical prose, as well as "the false clarity of over-simplification."

Mindful of these things, we publish from time to time "occasional papers" on a variety of educational topics designed to raise new questions, stimulate the creation of new ideas, and foster research aimed at discovering "why." These papers suggest rather than conclude. Our hope is that we may interact with the times, to do our part to solve the problems, to out gadfly our gadflying children.

James H. Bash
Professor of Education
Director of Field Services

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Occasional Paper 6

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Introduction

The emerging discipline of institutional research is receiving noticeable attention through reports published in journals, dissertations, ERIC documents and the like. With the increased awareness of the discipline and the improved communication among institutional researchers through various means of publications, not only is it timely to assess the state of the art of institutional research methodology, but also, to place some judgment concerning the quality of research methods used in conducting institutional research. An assessment of methods used in institutional research at this early stage of development may well prove worthwhile in strengthening the state of the art and in establishing common bases for comparability and replication of important studies in higher education. Such a consequence would also enhance the institutional research reports to administrators for decision-making purposes.

Problem

This report is based upon the assumption that most institutional research studies are conducted in a provincial manner directed toward providing information delimited to a particular institution. This procedure in effect restricts inferences made and the ability for comparable institutions to replicate similar studies and expand their frame of inference. The problem which exists, therefore, is that established research methods such as those used in the behavioral sciences have not been widely applied to the problems in institutional research.

Objectives

The field of institutional research extends to all phases of activities associated with institutions of higher education. Traditionally, components of institutional research have centered around students, faculty, space, fiscal matters, and physical facilities.

The area of concern in this report relates to student studies--and specifically follow-up studies in higher education. Specific objectives for conducting the analysis are: 1) to examine strengths and weaknesses of research methods used in reports on follow-up studies in higher education and 2) to develop a set of guidelines for conducting follow-up studies by institutional researchers.

Procedures

Selection of Reports on Follow-Up Studies in Higher Education.

A careful examination of the *Education Index,* ERIC publications from July, 1964 to date, and card catalogue files revealed 95 reports with titles relating to the general category "Follow-Up Studies in Higher Education." These 95 reports were located in 62 journal articles, 14 dissertations, and 19 ERIC documents. Eighteen of the references could not be located . After examining those reports available it was revealed that only 47 of the reports were actually follow-up studies in higher education. The 30 reports which were not directly related to follow-up studies in higher education were concerned with literature surveys, with studies dealing with high school students, or with surveys of enrollees who were in active student status. All of these were excluded from the analysis of this report.

Criteria Used for Analysis

The criteria used to judge the reports of follow-up studies in higher education were obtained from Strauss (1969). Others have presented guidelines for evaluating educational research reports (Bixler, 1928; Dvorak, 1956; Farquhar and Krumboltz, 1959; Johnson, 1957; Stephens, 1967; Symonds, 1956; Wandt and

others, 1967). Strauss, however, presented 20 criteria which can be applied very easily to judge reports on educational research. The 20 criteria presented by Strauss do not give a "best fit" to institutional research reports, but the 20 criteria were used here because they can easily be adapted to institutional research reports without losing sight of the need for better methods in conducting institutional research studies. The 20 criteria suggested by Strauss for evaluating educational research reports are: problem raised, previous work cited, objectives stated, hypotheses formulated, assumptions made, population studied, sample drawn, instruments used, design examined, procedure followed, safeguards taken, observations recorded, findings assembled, statistics interpreted, interpretations discussed, conclusions reached, limitations recognized, further work projected, improvements suggested, and clarity of report. The author of these guidelines, Strauss, recognized full well that the criteria were developed to evaluate experimental research reports in education.

The analytical procedures used in this report are limited to the follow-up studies identified for analysis and the 20 criteria judiciously chosen as a framework for judgement of the reports.

The actual procedures for evaluating the research methods reported in the selected follow-up studies in higher education consisted of careful comparison of the studies with the 20 criteria and recording whether or not each report met the criteria. To some degree the accuracy and completeness of the information reported in each study was judged.

Findings

Applying Strauss's 20 criteria for evaluating educational research methods to selected reports of follow-up studies in higher education the following judgments were reached by this writer:

1. Nearly all (91%) of the follow-up studies stated a problem in their reports; 9% did not have a statement of the problem. Of the 91% of the studies with statements of the problem, nearly

half (46%) of the statements were clearly identified, but 47% of the problem statements had to be searched for.

2. Citations of previous work in the follow-up studies were well formulated and related to the current problem in 22% of the reports; 48% gave very brief citations of previous work; 12% gave brief but improper citations; and 18% of the follow-up studies cited no previous work.
3. Nearly three-fourths (72%) of the follow-up studies contained specific objectives, while 28% of the reports contained no statement of objectives.
4. Only a few of the follow-up studies were constructed in a manner to test research hypotheses (9%).
5. Over one-half (64%) of the follow-up studies made assumptions concerning their research, and 36% reported assumptions which identified samples, instruments, and the like which could not be controlled.
6. Nearly all of the follow-up studies (99%) described the population used in their studies.
7. Nearly one-fourth of the studies (24%) chose samples to use in follow-up (9% random, 15% other), while 76% chose to follow up the entire population.
8. Nearly three-fourths (74%) of the follow-up studies used questionnaires to collect data. Of these, 85% described the questionnaire in detail, the other 15% only mentioned that a questionnaire was used. Other means for collecting data included personal interviews (6%), records and transcripts (6%), standardized tests (3%), and 11% of the reports did not mention how the data were collected in their follow-up studies.
9. Description of the statistical design used in the follow-up studies was identified in only 21% of the reports; 79% did not indicate how the follow-up data were to be treated.
10. Nearly one-half (44%) of the reports indicated that clear and logical procedures were to be

followed; 26% of the reports indicated procedures which could have been better organized; 15% of the reports indicated incomplete procedures; and 15% of the reports did not indicate any procedures to be followed.

11. Over three-fourths (76%) of the follow-up studies did not report any safeguards taken to control errors, while 18% used statistical methods to control bias errors, and 6% used sampling techniques to control bias which could enter into the findings of the follow-up study.
12. Only one-fourth (24%) of the follow-up studies reported primary sources of data or test scores, ratings, replies to questionnaires used, etc., and 76% of the reports did not report any primary sources of replies or responses.
13. Nearly all of the reports (97%) presented the findings of the follow-up studies in clear and well organized tables; only 3% of the reports lacked a clear presentation of the findings of their follow-up.
14. The types of statistics reported in the follow-up studies were primarily per cents (52%) and sum of responses (36%). Other types of statistics reported included ratios, range, chi-square, correlations, and analysis of covariance statistics.
15. Over one-half (61%) of the follow-up studies presented complete and accurate interpretations of their findings; 9% presented inaccurate inferences; and 30% gave only limited interpretations of their findings.
16. Almost all of the follow-up studies (90%) came to some type of conclusions, while 10% did not conclude anything from their study.
17. About one-half (51%) of the follow-up studies recognized limitations of their reports, while 49% did not recognize any limitations to their study.
18. Over one-third (36%) of the reports projected the need for further study, while 64% did not project any need for further study of their problem.

19. Over three-fourths (88%) of the follow-up studies did not suggest any means for improvement, while 12% of the reports gave suggestions on how to improve their projects or the reporting procedures.
20. The follow-up studies were grouped into two categories in regard to the clarity of the report: 43% of the studies were rated good to excellent, and 57% were rated fair to poor in clarity.

Discussion

The first point which should be revealed at this time is simply that Strauss' 20 criteria for evaluating educational research studies can be adapted to assess reports on follow-up studies in higher education, and as conducted in an institutional research context. Even though the nature of institutional research, as currently practiced, does not require the sophistication of research methods necessary for conducting experimental studies in education, most of these criteria were meaningful to the ordinary follow-up studies reported in the literature. The findings of this report, also, indicated that follow-up studies in higher education can be improved if certain guidelines are followed. The strengths of research methods revealed in the reports on follow-up studies in higher education appeared to be: 1) statement of the problem, 2) previous work cited, 3) statement of objectives, 4) description and selection of the population, 5) assembling the findings, and 6) conclusions reached. Those criteria which could have been improved in the reports were: 1)assumptions under which the follow-up was conducted, 2) field testing and validating of instruments used, 3) clarification of design used, 4) complete description of procedures followed, 5) safeguards taken to control error or bias, 6) recording of primary sources of data, 7) more refined statistics for strong and accurate inferences, 8) complete interpretations of findings in relation to the problems and objectives for conducting the follow-up, 9) recognition of limitations of the study, 10) constructive criticism of the study for further improvements, and 11) clearness of the writing and sound organization of the report.

The nature of a follow-up study in an institutional research setting and for meeting dissertation requirements are different. In an institutional research setting the need to conduct follow-up studies has not been comprehensive enough to require rigid experimental research methods. Usually, the need to conduct a follow-up study by institutional researchers has been to describe where graduates of a single institution have gone and offer simple descriptions of selected characteristics of these graduates after taking a degree. Also, it is more desirable to use the entire population in such a setting than to select a random sample. Academic deans usually desire to know where all of their graduates have gone and what they are doing in contrast to a selected sample.

For institutional researchers who are desirous of improving their research skills to strengthen approaches in conducting follow-up studies, most large campuses contain many courses on statistics, research design, psychometric testing, and the like. The reports analyzed in this study, however, indicate that only a knowledge of descriptive statistics has been used in the past in conducting follow-up studies. As the discipline of institutional research matures it will be desirable to strengthen the inferential base of institutional data and this will require a higher level of knowledge and research skills. Finally, it is only a matter of time before a *Journal of Institutional Research* will be created. In order to support such a competitive journal it will be necessary to provide high quality reports.

From the findings of this report the writer would suggest that the following guidelines can be used to strengthen the conducting and reporting of follow-up studies in higher education. The guidelines should be used in preparing or structuring the follow-up study as well as in reporting purposes.

Guidelines for Conducting Follow-Up Studies in Higher Education

1. **Statement of the Problem.** A problem may be stated in several different ways. A very desirable manner is to state the problem in question form which clearly explains what you are trying to determine. The question should be stated in clear and precise terms so that the remainder of the study will have a logical flow or syntax.
2. **Justification for the Study.** Why is the problem one of significance? Evidence from previous studies and recommendations should be documented to support the need to study the problem as stated.
3. **Objectives of the Study.** The objectives should state the intent for doing the study and for attacking the problem. The statement of objectives, which originate from the problem, should be stated in clear, concise terms. Since follow-up studies are applied research by nature, it is infrequent that hypotheses are necessary to be stated; and, therefore, objectives may be divided into a primary or general level with specific or secondary sub-levels.
4. **Delimitations of the Study.** Follow-up studies have been delimited by nature of populations surveyed, questionnaires used, per cent of returns, type of data recorded, and the like. Because of the lack of very tight research controls, it is desirable to explain all the elements in the study which may bias the findings and restrict inferences of the interpretations and conclusions--such as validation of the instruments, population defined, sampling procedures, and statistical designs used. All of these should be made clear.
5. **Procedures.** The procedures for conducting a follow-up study in higher education should be described completely in order that others may replicate the study or extend your research. These procedures should answer the question, "How did you do it?" and usually consist of:

a. *Population Defined.* The population should be described in complete detail--size, year of graduation, type, sex, and other basic characteristics.

b. *Sample Selected.* If a sample was selected from the population, how was it selected? Random, stratified-random, cluster, incidental, etc. The characteristics of the sample should also be completely defined.

c. *Data Collection and Measurement.* The techniques of how the data were collected and types of measurements recorded have usually received the most attention in conducting follow-up studies. Yet, very few persons have reported any field testing or validation attempts concerning questionnaires and interview techniques used. Relaxed approaches to gathering data by means of invalidated techniques results in data collected with inconsistencies and highly restrictive interpretations and inferences. An original questionnaire or interview technique should be developed upon sound theories and practices in psychometrics and field tested to the extent that these means will serve effectively to obtain desired information. Procedures involved to produce a valid questionnaire, interview technique, or any other means for data collection should be explained in detail. The nature of the data to be collected and measures recorded should be included in the description of the methods used in collecting data.

Occasionally, standardized tests are used in follow-up studies in higher education. The use of these tests should be justified, described, and properly acknowledged.

Methods for increasing the number of responses in follow-up studies in higher education is very important to describe. Some persons have experienced success in increasing the number of responses by additional mailings, phone calls, telegrams, and personal visits to the respondent's community.

d. *Plan of Data Analysis.* The plan of data analysis should be related to the statement of the problem and objectives. The statistical design should reveal the form

in which the data are recorded and to be analyzed. Simple and robust designs are preferable to elaborate designs which attempt too much.

e. *Report of Findings.* The primary sources of data, such as replies to questionnaires, interviews, test scores, etc., should be recorded. These data sources would fit well into tables or appendices and provide other institutional researchers an opportunity to compare data between institutions.

The findings should also be summarized in table form, graphs, charts or the like. These presentations should be complete, well-defined, and self-explanatory.

f. *Interpretation of the Findings.* The findings should be interpreted in relation to the problem and procedures used in the study. One might ask, "Is the relationship between the problem and procedures clear and consistent, so that the findings are valid?" An occasional inferential error identified in follow-up studies is to obtain a 50 per cent return from a population or sample and make inferences about 100 per cent of the population. Another shortcoming identified occasionally in reports on follow-up studies was to make judgments regarding significant differences without appropriate statistical designs. It is desirable to obtain all meaning possible from the findings within a useful reference for institutional decision-making and planning.

g. *Conclusions of the Study.* The conclusions of the study should be consistent with the findings or obtained results and in relation to the problem and objectives of the study. A serious problem arises when conclusions of the report are not warranted upon the bases of the findings.

h. *Limitations Recognized.* Every follow-up study in higher education will have limitations or weaknesses which may or may not be due to the investigator or unexpected events. Oftentimes unexpected events occur with the per cent of responses, measurements used, design used, population, and the like. These limitations should be revealed so that the consumer will be aware.

i. *Recommendations for Further Study.* A well planned and executed study will usually arouse interest and challenge further study. Comments to improve further studies should described in constructive criticisms.

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